

Renewable Surface Biosensors with Optical Detection

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One major challenge in the development of biosensors is the limited lifetime of a chemically selective surface that includes biomolecules. Renewable surface biosensors address this issue by using fresh aliquots of derivatized microbeads for each analysis. The analyte detection can then occur on the microbeads, or downstream from the microbeads. In this paper, we will describe two types of renewable surface biosensors. The first renewable biosensor system includes on-column optical detection for monitoring the binding of biomolecules onto protein or DNA-derivatized Sepharose beads. The second renewable biosensor system includes detection downstream from the microparticles and is based on the use of derivatized magnetic particles for selective binding. The magnetic particles are fluidically captured and released in a sequential injection system to allow the automation of an Enzyme Linked ImmunoSorbent Assay.